

WHAT IS CLAIMED IS:

1. Transfer system for items conveyed piece by piece between a first conveyor unit and at least one other conveyor unit extending transversely or at an angle thereto, whereby the conveyed items can be fed on a substantially horizontal conveyor plane, which conveyor plane is defined either by at least two conveyor elements of a first conveyor spanning the transfer system or by separate conveyor elements of a first conveyor unit disposed directly on the transfer system, characterised in that a brake mechanism is provided which can be raised above and lowered below the conveyor plane so that it can be selectively placed in and out of friction contact with the bottom face of the conveyed item as well as a lifting and conveying mechanism, the conveyor elements of which can be raised and lowered so that the conveyed item can be picked up from the first conveyor unit and transferred onto one of the other conveyor units without jamming, whereby a first positioning mechanism for the raisable and lowerable brake mechanism and a second positioning mechanism for the lifting and lowering action of the lifting and conveying mechanism are mechanically coupled in displacement and are linked to one another by a common first drive system only.

2. Transfer system as claimed in claim 1, characterised in that the first conveyor unit in the conveyor plane has mutually spaced circulating conveyor elements in the form of an endless loop, in particular conveyor chains or conveyor belts.

3. Transfer system as claimed in claim 1, characterised in that the conveyor elements of the lifting and conveying mechanism are provided in the form of a plurality of conveyor rollers, the axes of rotation of which extend parallel with the feed direction of the

first conveyor unit.

4. Transfer system as claimed in claim 3, characterised in that the conveyor rollers are mounted on a common bearing frame of the lifting and conveying mechanism.

5. Transfer system as claimed in claim 4, characterised in that a drive system for the conveyor rollers is attached to the bearing frame.

6. Transfer system as claimed in claim 5, characterised in that the drive system is linked via a chain or belt drive so as to displace a plurality of conveyor rollers.

7. Transfer system as claimed in claim 1, characterised in that the first drive system has an electric motor which drives in one direction.

8. Transfer system as claimed in claim 1, characterised in that the first drive system is a self-inhibiting gear mechanism, a brake motor or a brake hold mechanism that can be otherwise activated as and when necessary for the positioning mechanisms of the brake mechanism and the lifting and conveying mechanism.

9. Transfer system as claimed in claim 1, characterised in that the first drive system is coupled via a crank drive or a push-crank arrangement or a connecting drive so as to displace the positioning mechanisms.

10. Transfer system as claimed in claim 9, characterised in that, from an initial or non-operating position below the conveyor plane, the brake mechanism and the lifting and conveying mechanism are returned to these initial or non-operating position after a complete rotation of a crank wheel or a crank arm of the crank drive or connecting drive.

11. Transfer system as claimed in claim 1, characterised in that the positioning mechanisms are provided in the form of at least one rotatably mounted swing lever.

12. Transfer system as claimed in claim 11, characterised in that the swing lever has two positioning arms spaced apart at an angle or offset from one another within a pivot plane.

13. Transfer system as claimed in claim 12, characterised in that the positioning arm is displaceably coupled with the brake mechanism or a brake element and the other positioning arm are displaceably linked to the lifting and conveying mechanism.

14. Transfer system as claimed in claim 11, characterised in that the swing lever has three arms, one being a drive arm and the other two being positioning arms.

15. Transfer system as claimed in claim 14, characterised in that the drive arm is articulately linked to the crank drive or connecting drive, in particular to the coupling rod thereof.

16. Transfer system as claimed in claim 14, characterised in that the drive arm and the two positioning arms are secured to a common bearing shaft.

17. Transfer system as claimed in claim 16, characterised in that the two positioning arms are disposed at a distance from one another in the longitudinal direction of a pivot axis of the bearing shaft.

18. Transfer system as claimed in claim 1, characterised in that two oppositely lying end regions of the brake mechanism , in particular a brake bar, respectively co-operate with a first positioning mechanism.

19. Transfer system as claimed in claim 1, characterised in that two oppositely lying end regions of the bearing frame for the lifting and conveying mechanism co-operate respectively with a second positioning mechanism.

20. Transfer system as claimed in claim 18, characterised in that the mutually spaced first positioning mechanisms are coupled in displacement via a dimensionally stable element or a brake element of the brake mechanism.

21. Transfer system as claimed in claim 19, characterised in that the mutually spaced second positioning mechanisms are coupled in displacement via the bearing frame.

22. Transfer system as claimed in claim 17, characterised in that the bearing shaft is rotatably mounted on a base frame or sub- or support frame of the transfer mechanism.

23. Transfer system as claimed in claim 22, characterised in that bearing mechanisms are respectively provided on each of the distal end regions of the bearing shaft, which are secured to the base frame or sub- or support frame.

24. Transfer system as claimed in claim 1, characterised in that the brake mechanism, in particular its brake bar, effects a combined vertical and horizontal motion via the rotatably mounted positioning mechanism.

25. Transfer system as claimed in claim 1, characterised in that the lifting and conveying mechanism effects a combined vertical and horizontal motion via the rotatably mounted positioning mechanism.

26. Transfer system as claimed in claim 24, characterised in that the brake mechanism, in particular at least one brake bar thereof, it is displaced by the positioning mechanism into its active position above the conveyor plane, being moved in the vertical direction perpendicular to the conveyor plane as well as in the horizontal direction in the direction of the feed direction - arrow - of the first conveyor unit.

27. Transfer system as claimed in claim 1, characterised in that a stop element is provided for the conveyed goods, aligned parallel with the feed direction - arrow - of the lifting and conveying mechanism.

28. Transfer system as claimed in claim 27, characterised in that the stop

element is secured to the bearing frame of the lifting and conveying mechanism and projects above the conveyor plane thereof.

29. Transfer system as claimed in claim 28, characterised in that when the brake mechanism, in particular at least a brake bar thereof, is moved into its active position via the positioning mechanism, it is moved in the vertical direction perpendicular to the conveyor plane as well as in the horizontal direction in the direction towards the stop element.

30. Transfer system as claimed in claim 27, characterised in that, by reference to the feed direction - arrow - of the first conveyor unit, the stop element is disposed in an end region of the brake mechanism.

31. Transfer system as claimed in claim 1, characterised in that an end of a positioning arm of the positioning mechanism for the brake mechanism spaced at a radial distance apart from the pivot axis or bearing shaft can be displaced starting from a first bottom dead centre, through a top dead centre to another bottom dead centre and vice versa.

32. Transfer system as claimed in claim 31, characterised in that the end of the positioning arm travels across a displacement path starting from a first bottom dead centre, through a top dead centre to another bottom dead centre after a half rotation of the crank drive, in particular the crank wheel thereof, and lies at the first bottom dead centre again after a full rotation of the crank drive.

33. Transfer system as claimed in claim 31, characterised in that the end

of the positioning arm is coupled via an articulated link so as to displace the brake mechanism, in particular the brake element or brake bar thereof.

34. Transfer system as claimed in claim 12, characterised in that a length of the positioning arm for the brake mechanism is longer than a length of the positioning arm for the lifting and conveying mechanism.

35. Transfer system as claimed in claim 12, characterised in that, by reference to its pivot plane, the positioning arm for the brake mechanism is more steeply aligned, in particular lies closer to a top dead centre of its pivoting motion when pivoted about the pivot axis, than the positioning arm for the lifting and lowering function of the lifting and conveying mechanism.

36. Transfer system as claimed in claim 1, characterised in that a stop element for the conveyed item is provided in an end region of brake surfaces or brake bars of the brake mechanism by reference to the feed direction - arrow - of the first conveyor unit.